

ABSTRACT OF THE DISCLOSURE

Stent delivery devices and methods include a shuttle for carrying multiple stent segments, to avoid direct contact between the stent segments and an expandable member. A sheath is disposed over the expandable member such that when it is withdrawn, a distal portion of the expandable member is exposed to expand against the shuttle, thus expanding the shuttle and expanding and deploying a selected number of stent segments. To deploy a second selected number of stent segments, the sheath may be withdrawn further to expose more of the expandable member. Thus, one or more custom length stents may be deployed with a reduced risk of damage to the expandable member and the stent segments and enhanced ease and accuracy of stent placement at a treatment location.